REMARKS

Responsive to the Office Action mailed December 2, 2002, please consider the following Remarks. Applicants have canceled claims 2, 12, 55 and 56. Applicants have amended claims 1, 9, 15 and 52. Specifically, Applicants have made formal amendments to claims 9 and 15 and have amended claim 1 to incorporate the subject matter of claim 2 (*now canceled*). Claims 1, 3-11, 13-21, 51-54 and 57 are pending after the amendment.

Claims 1-4, 8-18 and 51-57 were rejected under 35 USC 112, second paragraph, for failing to particularly point and distinctly claim the subject matter to which Applicants are entitled. Based upon the amendments, canceled claims and arguments, these rejections are traversed or are moot.

Claim 1 has been amended to incorporate the subject matter of claim 2. Claims 2, 12, 55 and 56 have been canceled. Claim 15 has been amended to change the dependency from claim 12 to claim 1. As per the Examiner's suggestion, claim 55 has been amended to recite Markush-type language.

Claim 9 was rejected because, according to the Office Action, the phrase "...an effective amount of the enzyme..." was indefinite. Claim 9 has been amended so that "...enzyme..." was changed to –polyphenol oxidase, and aspariginase, or a combination thereof–. Based upon the recited language in the amended claim, Applicants believe that "...an effective amount..." particularly points out and distinctly claims the subject matter of the invention to one of ordinary skill in the art.

Accordingly, reconsideration and withdrawal of the rejection of claims 1-4, 8-18 and 51-54 and 57 are proper and respectfully requested.

Claims 1, 3, 51, 53, 54 and 55 were rejected under 35 U.S.C. 102(b) as being anticipated by Miyasaki et al.; claims 9, 10 and 17 were rejected under 35 U.S.C. 102(b)

as being anticipated by Mikasaki et al.; claims 9-15, 17-18 and 56-57 were rejected under 35 U.S.C. 103(a) as being unpatentable over Johansen in view of Singh et al. These rejections are respectfully traversed in view of the amended claims.

A *prima facie* case of anticipation requires that each and every claim element is disclosed in a single reference; a *prima facie* case of obviousness requires that the references, together or combined, teach or suggest all of the claimed elements (*see* MPEP 2131 and 2142, respectively). As claimed in independent claims 1 and 9, the invention is drawn to a method of reducing binding or adhesion in a microorganism, respectively, comprising contacting or exposing the microorganism to polyphenol oxidase, an aspariginase, or a combination thereof. None of the references, together or alone, teach or suggest exposing a microorganism to polyphenol oxidase, an aspariginase, or a combination thereof. Accordingly, the claim references fail to make out a *prima facie* case of anticipation or obviousness, and reconsideration and withdrawal of the rejections are respectfully requested.

In view of the foregoing, Applicants believe all claims now pending in this application are in condition for allowance and issuance of a formal Notice of Allowance is respectfully requested. The Examiner is invited to contact Applicants at (650) 846-7544 if there are additional questions/concerns.

Respectfully submitted,

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Listed at the end of the Amendment
Specification Currently Amended
Status of Claims

IN THE SPECIFICATION

Currently Amended

Page 1, please add the following new paragraph after line 7. "This is a continuation of Application No. 60/173,821, filed December 30, 1999."

Please replace the paragraph located at page 15, lines 7-20, with the following:

"Microorganisms that employ adhesin molecules having binding site tyrosine and/or asparagine residues include bacteria, such as *Actinobacillus actinomycetemcomitans, Actinomyces israelii, A. naeslundii* and *A. viscosus, Capnocytophaga ochracea, Eikenella corrodens, Escherichia coli, Fusobacterium nucleatum, Haemophilus influenzae, Porphyromonas gingivalis, Prevotella intermedia, Proteus mirabilis, Proteus vulgaris, P. aeruginosa, P. loeschei, Streptococcus gordonii, S. mutans, S. oralis, S. sanguis,* various group A streptococci, various invasive and antibiotic resistant staphylococci, and *Treponema denticola*; viruses such as influenza virus, specifically influenza A virus; yeasts, such as *Candida albicans*; and protozoans, such as *Entamoeba histolytica.* Adhesin molecules of several M5, M6 and M24 positive strains of streptococci have been studied (Dale J.B. *et al.*, Vaccine 14-944-948 (1996); Courtney *et al.*, [REMS] FEMS Microbiol. Letters 151:65-70 (1997)). *P. aeruginosa* makes a good model for study as its adhesion can depend on two lectins, PA-1 and PA-2. Furthermore, the bacterium will form biofilms on a variety of surfaces, ranging from glass and steel to human lungs."

STATUS OF THE CLAIMS

Claims 22-50 (Previously canceled)

1. (Amended) A method of reducing binding of a microorganism to a surface, comprising [enzymatically modifying an adhesin on the microorganism] contacting the microorganism with a polyphenol oxidase, an asparaginase, or a combination thereof.

Please cancel claim 2.

3. The method of claim 1, wherein the microorganism comprises a prokaryote, a eukaryote, a virus, or a combination thereof.

4. The method of claim 3, wherein the prokaryote comprises a gram-positive bacterium, a gram-negative bacterium, or a combination thereof.

5. The method of claim 3, wherein the prokaryote comprises a *Staphylococcus*.

6. The method of claim 3, wherein the eukaryote comprises a fungus or protozoan.

7. The method of claim 6, wherein the fungus comprises a *Candida*.

8. The method of claim 1, wherein the adhesin comprises a lectin.

9. (Amended) A method of reducing adhesion by a microorganism, comprising exposing the microorganism to an effective amount of [an enzyme] polyphenol oxidase, an asparaginase, or a combination thereof, which thereby reduces adhesion by a microorganism.

10. The method of claim 9, wherein the enzyme catalyzes a reaction for modifying a molecule on the microorganism.

11. The method of claim 9, wherein the enzyme catalyzes modification of a side chain of an amino acid.

Please cancel claim 12.

13. The method of claim 11, wherein the amino acid comprises asparagine, tyrosine, or a combination thereof.

14. The method of claim 9, wherein the enzyme modifies a carbohydrate binding site on the microorganism.

15. (Amended) The method of claim [12] 1, wherein a lectin comprises the carbohydrate binding site.

16. The method of claim 9, wherein the enzyme comprises a polyphenol oxidase, an asparaginase, or a combination thereof.

17. The method of claim 9, wherein the microorganism comprises a prokaryote, a eukaryote, a virus, or a combination thereof.

18. The method of claim 17, wherein the prokaryote comprises a gram-positive bacterium, a gram-negative bacterium, or a combination thereof.

19. The method of claim 18, wherein the prokaryote comprises a *Staphylococcus*.

20. The method of claim 17, wherein the eukaryote comprises a fungus or protozoan.

21. The method of claim 20, wherein the fungus comprises a *Candida*.

51. (Previously added) The method according to claim 1, wherein the surface comprises cells, tissues or extracellular matrix.

52. (Amended) The method according to claim 1, wherein the surface comprises a at least one member selected from the group consisting of a catheter, implant, prosthesis [or] and man-made device that is placed in the catheter, implant, prosthesis or man-made device being located in or on a mammal's body or body cavity.

53. (Previously added) The method according to claim 1, wherein the surface contacts mammals or mammlian fluids.

54. (Previously added) The method according to claim 53, wherein the mammal is human or mammalian fluid is from a human.

Please cancel claim 55 and 56.

57. (Previously added) The method according to claim 1 or claim 9, wherein the microorganism is at least one selected from the group consisting of *S. sobrinus, S. sanguis, A. naeslundll, E. coli, Porphyromnas gingivalis* W50, *Actinobacillus actinomycetemcomitans* 33384, *F. nuclateum* 25586, *Capnocytophaga ochracea* 27872, *P. intermedia* 25611, *S. cerevisia, Saccharmocyes, P. aeruginosa, Streptococcus pneumoniae, Haemophilus* influenzae and S. *enteritidis*--.